2013 UDOT RESEARCH PROBLEM STATEMENT

****** Problem statement deadline is March 25, 2013. Submit statements to Steve Bagley at sbagley@utah.gov ******

Problem Title: Understanding UDOT's Role in Utah's Air Quality Challenges **No. :UT-13.06.03**

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Select a Subject Area

- ☐ Geotechnical
- ☐ Materials/Pavements
- ☐ Preconstruction
- ☐ Maintenance
- ☒ Planning/Asset Mgmt
- ☐ Traffic Mgmt/Safety
- ☐ Transportation Innovation

1. Describe the problem to be addressed.

During northern Utah's recent winter inversion, when air pollution in several Utah counties were among the worst in the nation, many were pointing to the transportation system as both the cause for bad air and a likely place to find the solution. This research will frame northern Utah's air quality problem and examine the magnitude of change possible from aggressive, but reasonable, changes in transportation during air quality episodes.

2. Describe why this research is important and how it is unique.

Air pollution issues are framed in a highly regulatory process involving the State DOT, Division of Air Quality, and Metropolitan Planning Organizations. Due to the complexity of the regulations and the potency of the penalties for non-compliance, strategies are viewed in isolation with rigorous cost-benefit comparisons and a comprehensive vision is not articulated. Since no single strategy can solve the complexity of the problems, the issues become contentious, adversarial, and clouded with jargon and federal acceptance. This research would allow UDOT to consider various "what if" questions about transportation's role in air pollution so that the department is in a better position to help tax payers and constituents achieve their long term goal of clean air and a strong transportation system.

3. List the research objective(s) to be accomplished:

1.Serve as a "sand box" for developing new ideas and concept s into the TravelWise program, the Traffic Operations Center, and other UDOT programs that might have an impact on air quality

2.Allow UDOT to take a proactive role in establishing a transportation vision that is compatible with clean air and is seen as fostering a strengthened economy on several fronts.

4. List the major tasks to accomplish the research objective(s):

1.Develop up to three packages of aggressive but reasonable transportation solutions to air pollution involving TravelWise, traffic operations, and other transportation programs and ideas.

2.Measure the effectiveness of each package of transportation solutions as short-term ("emergency") concepts during air pollution episodes.

3.Help develop talking points for UDOT leadership regarding transportation's role in air pollution episodes and the effect that various choices made by transportation users have on air pollution

5. List the deliverable(s) to come to UDOT from this research study:

1. At the end of this research, UDOT will obtain a comprehensive list of various transportation strategies and their range of effectiveness on the air pollution problems during temperature inversion episodes.
2. UDOT leadership will receive an incubated analysis of possible transportation visions and how those visions relate to clean air, user mobility options, economic vitality, and other goals of the department.

6. Describe how the results of this study will be implemented at UDOT.

The science and technology of transportation and air quality modeling is well advanced. While UDOT is involved in the regulatory process of air quality plans and transportation conformity, the Department is not proactive in explaining the air quality benefits of various UDOT projects and programs. This research will look specifically at the air quality benefits of various department controlled transportation projects, policies, and programs and measure the magnitude of air pollution benefit of various actions. The net result will allow UDOT leadership to assist policy leaders in developing a vision for transportation, air quality, and ultimately a long-term strong economy and quality of life. Funding this effort through research will allow the Department to evaluate a broad range of transportation related air quality strategies on an experimental or fact-finding basis.

7. Estimated cost - Total: $50,000 **UDOT Share:** $50,000 **Other/Matching Funds:** $

8. Outline the proposed schedule for this study, including estimated start date, duration, and major event dates.

This work can start immediately and results can be ready by the July/August summer air pollution season. The following schedule is proposed:

Mid-April 2013- Project Notice to Proceed

Late April 2013 - Background summary of air pollution problems including transportation (mobile source) share of problems both historically and in present day.

Early May 2013 - Convene a committee of air quality and transportation experts and advocates to brainstorm packages of transportation programs, projects, advisories, restrictions that can be implemented during air pollution episodes.

Late May 2013 - Finalize discrete packages of transportation programs etc. and determine travel demand modeling assumptions that best simulate the transportation packages.

Late June 2013 - Compile travel model results and input into TRIMS 3.0 air quality model to develop emissions estimates consistent with MOVES mobile model emission rates used by Utah DAQ and others.

Mid- July 2013 - Summarize results and present results to UDOT.